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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/704,649	11/02/2000	Sinha Navin Kumar	JP920000155US1	4492

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EXAMINER

CHANG, SUNRAY

ART UNIT	PAPER NUMBER
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2121

DATE MAILED: 07/27/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 09/704,649	<b>Applicant(s)</b> KUMAR, SINHA NAVIN	
	<b>Examiner</b> Sunray Chang	<b>Art Unit</b> 2121	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
  - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
  - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
  - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 02 November 2000.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 November 2000 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>11022004</u> | 6) <input type="checkbox"/> Other: _____  |

### **DETAILED ACTION**

1. Claims 1 – 20 are presented for examination.

Claims 1 – 20 are rejected.

### ***Drawings***

2. The drawings are objected to because the flow chart of Fig. 2B with “decision making” steps each with only one “next step”. This would cause the program to fail. For example, Step 15 and 16 Fig. 2B, The program is going to fail if the “Ci” is not true for given call site or if current Condition does not imply Ci. Corrected drawing sheets are required in reply to the Office action to avoid abandonment of the application. Any amended replacement-drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled “Replacement Sheet” in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the

Art Unit: 2121

applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

3. Claims 1 – 20 are rejected under 35 U.S.C. 102(e) as being anticipated by Mauricio Breternitz, Jr. et al. (U.S. Patent No. 6,381,739, and referred to as Breternitz here in after).

4. Regarding **Independent claim 1**,  
Breternitz teaches:

- A method for optimizing computer software [sequencing instructions for optimal data processor execution, Col. 1, Line 21]
- Call statement and a procedure which is callable by the call statement and which has code branches and control flow code for directing program flow to the code branches. [Computer program, Col. 1, Line 26 and Col. 2, Line 4]
- Analyzing step [Col. 2, Line 4 – 6]
- Identifying step [Col. 2, Line 10 – 13]
- Recording step [Col. 2, Line 14 – 15, and Col. 2, Line 41 – 45]
- Scanning step [Col. 2, Line 40 – 51, and Col. 2, Line 56 – 60]

5. Regarding **dependent claim 2**,

Breternitz teaches:

- Control flow graph for the procedure. [Col. 1, Line 26 – 30 and Col. 1, Line 45 – 46]

6. Regarding **dependent claim 3**,

Breternitz teaches:

- Control flow code for directing program flow to these code branches. [Col. 2, Line 4 – 6]
- Checking for compliance between predetermined rules. [Determine an efficient manner of ordering basic blocks in memory, Col. 2, Line 56 – Col. 3, Line 14]

- The method only in the event of such compliance. [Selected with the highest existing path/edge is selected, Col. 3, Line 13 – 14]

7. Regarding **dependent claim 4**,

Breternitz teaches:

- Cost-analysis algorithm based on predetermined rules about the length of the software. [Algorithm, Col. 2, Line 47 – 59]

8. Regarding **dependent claim 5**,

Breternitz teaches:

- Optimizing the new procedure by propagating that constant through the new procedure. [Directed graph, incrementing the weight, Col. 2, 44 – 57]

9. Regarding **dependent claim 6**,

Breternitz teaches:

- Determining call statement, calling parameters, new procedure's compliance with in-lining rule. [Determine an efficient manner, prepares for the formation of a sequence chain or reordered of instructions, Col. 3, Line 2, and Col. 3, Line 10 – 16]
- Replacing procedure [efficient output order of basic block, Col. 3, Line 5]

10. Regarding **independent claim 7**,

Art Unit: 2121

Breternitz teaches:

- A method for optimizing computer software [sequencing instructions for optimal data processor execution, Col. 1, Line 21]
- Call statement and a procedure which is callable by the call statement and which has code branches and control flow code for directing program flow to the code branches. [Computer program, Col. 1, Line 26 and Col. 2, Line 4]
- Control flow graph for the procedure. [Col. 1, Line 26 – 30 and Col. 1, Line 45 – 46]
- Identifying a new procedure. [Col. 2, Line 10 – 12, Line 4 – 6, Line 55 – 60, and Fig. 1]
- Recording step [Col. 2, Line 14 – 15, and Col. 2, Line 41 – 45]
- Scanning step [Col. 2, Line 40 – 51, and Col. 2, Line 56 – 60]
- Modify step [Restructured computer file, Col. 3, Line 34 – 37]

11. Regarding **independent claim 8**,

Breternitz teaches:

- A computer system for optimizing computer software [sequencing instructions for optimal data processor execution, Col. 1, Line 21]
- Call statement and a procedure which is callable by the call statement and which has code branches and control flow code for directing program flow to the code branches. [Computer program, Col. 1, Line 26 and Col. 2, Line 4]
- Analyzing step [Col. 2, Line 4 – 6]

Art Unit: 2121

- Identifying step [Col. 2, Line 10 – 13]
- Recording step [Col. 2, Line 14 – 15, and Col. 2, Line 41 – 45]
- Scanning step [Col. 2, Line 40 – 51, and Col. 2, Line 56 – 60]
- Modify step [Restructured computer file, Col. 3, Line 34 – 37]

12. Regarding **dependent claim 9**,

Breternitz teaches:

- Analyzing means is for storing data. [Col. 2, Line 5 – 11]
- Nodes and edges. [Col. 2, Line 42 – 56]
- Control flow graph for the procedure. [Col. 1, Line 26 – 30 and Col. 1, Line 45 – 46]

13. Regarding **dependent claim 10**,

Breternitz teaches:

- Control flow code for directing program flow to these code branches. [Col. 2, Line 4 – 6]
- Checking for compliance between predetermined rules. [Determine an efficient manner of ordering basic blocks in memory, Col. 2, Line 56 – Col. 3, Line 14]
- The method only in the event of such compliance. [Selected with the highest existing path/edge is selected, Col. 3, Line 13 – 14]
- Identifying new procedure. [Efficient output order of basic blocks Col. 3, Line 5]



14. Regarding **dependent claim 11**,

Breternitz teaches:

- Cost-analysis algorithm based on predetermined rules about the length of the software. [Algorithm, Col. 2, Line 47 – 59]

15. Regarding **dependent claim 12**,

Breternitz teaches:

- Optimizing the new procedure by propagating that constant through the new procedure. [Directed graph, incrementing the weight, Col. 2, 44 – 57]

16. Regarding **dependent claim 13**,

Breternitz teaches:

- Determining call statement, calling parameters, new procedure's compliance with in-lining rule. [Determine an efficient manner, prepares for the formation of a sequence chain or reordered of instructions, Col. 3, Line 2, and Col. 3, Line 10 – 16]
- Replacing procedure [efficient output order of basic block, Col. 3, Line 5]

17. Regarding **independent claim 14**,

Breternitz teaches:

- A system for optimizing computer software [sequencing instructions for optimal data processor execution, Col. 1, Line 21]

Art Unit: 2121

- Call statement and a procedure which is callable by the call statement and which has code branches and control flow code for directing program flow to the code branches. [Computer program, Col. 1, Line 26 and Col. 2, Line 4]
- Control flow graph for the procedure. [Col. 1, Line 26 – 30 and Col. 1, Line 45 – 46]
- Identifying a new procedure. [Col. 2, Line 10 – 12, Line 4 – 6, Line 55 – 60, and Fig. 1]
- Recording means [Col. 2, Line 14 – 15, and Col. 2, Line 41 – 45]
- Scanning means [Col. 2, Line 40 – 51, and Col. 2, Line 56 – 60]
- Modify means [Restructured computer file, Col. 3, Line 34 – 37]

18. Regarding **independent claim 15**,

Breternitz teaches:

- A computer program product for optimizing computer software [sequencing instructions for optimal data processor execution, Col. 1, Line 21]
- Call statement and a procedure which is callable by the call statement and which has code branches and control flow code for directing program flow to the code branches. [Computer program, Col. 1, Line 26 and Col. 2, Line 4]
- Analyzing computer code portion [Col. 2, Line 4 – 6]
- Identifying computer code portion [Col. 2, Line 10 – 13]
- Recording computer code portion [Col. 2, Line 14 – 15, and Col. 2, Line 41 – 45]
- Scanning computer code portion [Col. 2, Line 40 – 51, and Col. 2, Line 56 – 60]

- Modify computer code portion [Restructured computer file, Col. 3, Line 34 – 37]

19. Regarding **dependent claim 16**,

Breternitz teaches:

- Machine readable storage medium storing computer code. [Memory which contains all computer software and data as taught herein, Col. 6, Line 38 – 39]

20. Regarding **dependent claim 17**,

Breternitz teaches:

- Machine readable storage medium storing computer code. [Memory which contains all computer software and data as taught herein, Col. 6, Line 38 – 39]
- Available for downloading from a computer connected to a computer network.  
[External storage maybe floppy disks, magnetic tapes, CD-ROM, a network connection, or even other computer, Col. 6, Line 45 – 46]

21. Regarding **independent claim 18**,

Breternitz teaches:

- A computer program product for optimizing computer software [sequencing instructions for optimal data processor execution, Col. 1, Line 21]
- Call statement and a procedure which is callable by the call statement and which has code branches and control flow code for directing program flow to the code branches. [Computer program, Col. 1, Line 26 and Col. 2, Line 4]

Art Unit: 2121

- Control flow graph for the procedure. [Col. 1, Line 26 – 30 and Col. 1, Line 45 – 46]
- Identifying a new procedure. [Col. 2, Line 10 – 12, Line 4 – 6, Line 55 – 60, and Fig. 1]
- Recording portion [Col. 2, Line 14 – 15, and Col. 2, Line 41 – 45]
- Scanning portion [Col. 2, Line 40 – 51, and Col. 2, Line 56 – 60]
- Modify portion [Restructured computer file, Col. 3, Line 34 – 37]

22. Regarding **dependent claim 19**,

Breternitz teaches:

- Machine readable storage medium storing computer code. [Memory which contains all computer software and data as taught herein, Col. 6, Line 38 – 39]

23. Regarding **dependent claim 20**,

Breternitz teaches:

- Machine readable storage medium storing computer code. [Memory which contains all computer software and data as taught herein, Col. 6, Line 38 – 39]
- Available for downloading from a computer connected to a computer network. [External storage maybe floppy disks, magnetic tapes, CD-ROM, a network connection, or even other computer, Col. 6, Line 45 – 46]

Art Unit: 2121


**Conclusion**

24. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Bortnikov et al. (U.S. Patent No. 5,950,009) discloses optimized computer program, faster execution time, reorder program portion, priority value. Chow et al. (U.S. Patent No. 6,026,241) discloses ssa, static single assignment, redundancy elimination, compile. Chaiken (U.S. Patent No. 6,481,008) discloses Optimization tools for heterogeneous program, code block, procedure.

25. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sunray Chang whose telephone number is 703-305-8744. The examiner can normally be reached on M-F 7:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Anthony Knight can be reached on (703)308-3179. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-746-3506.

Sunray Chang  
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**Anthony Knight**  
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July 19, 2004